

WIC/Cost Benefit Analysis 1994

The Special Supplemental Nutrition Program for Women, Infants and Children (WIC) was established in 1972 to provide supplemental food to low and moderate income pregnant or lactating women, new mothers, and young children who are nutritionally at risk. In addition to food the WIC program provides these families with nutrition education and encourages the use of prenatal and other medical services.

This study represents the fourth in a series¹ evaluating WIC prenatal participation in Missouri using Medicaid newborn records matched with their corresponding birth certificates. The current study examines 25,636 Medicaid newborns born in 1994. Records with no matching maternal Medicaid records, incomplete Medicaid cost information and from the Jackson County managed care program were excluded from an original sample of 31,799 Medicaid newborns. The study file was linked to the WIC certification file and contained 19,930 WIC participants and 5,706 non-WIC births. This 78 percent participation rate illustrates continued WIC expansion and contrasts with 54.5 percent in 1985-86, 36 percent in 1982 and 25 percent in 1980.

Table 1 shows the distribution of selected characteristics by WIC and non-WIC populations. Some characteristics indicate that the WIC population is at greater risk of a negative pregnancy outcome while others indicate less risk. WIC mothers are more likely to be less than 18 years of age (11.3 vs. 7.9 percent for non-WIC births), on food stamps (51.7 vs. 46.3 percent), less than a high school graduate (39.1 vs. 35.5 percent) and to be 175 pounds or more (20.5 vs. 16.7 percent). On the other hand, WIC participants were less likely to be age 35 or more (3.6 vs. 4.5 percent for non-WIC mothers) to be on AFDC (Aid to Families with Dependent Children) (50.4 vs. 56.1 percent) to be black (24.9 vs. 35.8 percent) and to be unmarried (34.4 vs. 40.9 percent). Overall, the WIC Medicaid population tended to be at less risk than the non-WIC Medicaid as adjustment for confounding variables tended to reduce the difference between WIC and non-WIC rates of selected outcomes.

Table 1
Percent of WIC and Non-WIC Medicaid
Births by Selected Variables: Missouri 1994

	<i>WIC</i>	<i>Non-WIC</i>
	<i>N=19,930</i>	<i>N=5,706</i>
Mother Under 18 Years	11.3	7.9*
Mother 35 Years or Older	3.6	4.5
Multiple Birth	1.4	1.3
Mother on Food Stamps	51.7	46.3*
Mother on AFDC	50.4	56.1*
Mother Education <12	39.1	35.5*
Pre-pregnancy weight <100 lbs.	4.2	3.9
Pre-pregnancy weight >175 lbs.	20.5	16.7*
Weight gain <15 lbs.	9.3	10.2
Mother's Race Black	24.9	35.8*
Out-of-Wedlock	34.4	40.9*
1st Births	46.7	35.1*
Mother Smoking	32.5	31.4

*Statistically significant at .05 level.

Analysis of covariance was used to test whether WIC improves pregnancy outcome or reduces Medicaid costs. Variables selected as covariates to test if WIC reduces low birth weight (<2,500 grams) or inadequate prenatal care included age, race, education, marital status, pre-pregnancy weight and smoking behavior of mother, whether she is on food stamps or AFDC, number born and birth order. For the cost variables, global billing, third party liability and hospital per diem reimbursement rate were also used as covariables.

Table 2 shows that WIC mothers clearly made substantially earlier and more frequent use of prenatal care than non-WIC participants. More than 95 percent of WIC mothers entered prenatal care in the first trimester compared with 59 percent of non-WIC Medicaid mothers. Seven percent of the non-WIC mothers had no prenatal care compared with just 0.4 percent of the WIC mothers. The adjusted inadequate prenatal care rate was 20.9 percent compared with 35.5 percent for non-WIC mothers. This is by far the greatest differential of the four WIC Medicaid studies. Table 3 presents a comparison of the 1994 study with previous WIC studies. Generally, the new results confirm previous finding and in some instances show substantial improvements. WIC infants weighed an average of 45 grams greater than non-WIC infants, the largest differential among the four studies. The low birth weight differential of 1.7 percent (8.5 percent WIC vs. 10.2 percent non-WIC) is similar to past studies. Other 1994 indicators not shown are a reduction in preterm (less than 37 weeks gestation) (10.5 percent for WIC vs. 14.5 percent for non-WIC) and newborn length of stay (3.0 days for WIC vs. 3.4 days for non-WIC).

Table 2
Prenatal Care by WIC Status: Missouri Medicaid Births 1994

<i>Trimester care began</i>	<i>WIC</i>	<i>Non-WIC</i>
1st	75.1	59.0
2nd	21.7	28.0
3rd	2.7	6.1
None	0.4	7.0
	<i>WIC</i>	<i>Non-WIC</i>

Average month prenatal care began**	2.29	3.04
Average prenatal visits	11.0	9.5
Inadequate prenatal care	20.9	35.5

All WIC/non-WIC differences above are statistically significant at .05 level.

** Adjusted for appropriate confounding variables.

Newborn Medicaid paid claims beginning in the 60 days after birth were nearly \$600 less for WIC pregnancies than for non-WIC pregnancies in 1994. This is nearly five times the largest differential shown earlier (\$125 in 1985-86). Overall newborn costs are about double the costs in 1985-86, which reflects both inflation and the fact that the earlier studies only used the first 45 days after birth and excluded costs continuing after that time period.

Despite the increased savings in newborn costs, the overall cost benefits in 1994 were very similar to past studies. WIC costs averaged about \$200 per participant (4.8 months x \$41.65/month). Maternal paid claims were \$485 greater for WIC mothers because of increased costs associated with prenatal care. The overall savings in Medicaid paid claims for mothers and newborns was \$109 and therefore the benefit cost ratio was 0.55 or 55 cents saved in Medicaid costs for every dollar spent on WIC.

Past studies did not show any differences in maternal paid claims. The 1980 study showed no difference and the 1982 and 1985-86 studies did not even examine them because of the 1980 results. The increased maternal costs may be related to incentives added to the Missouri Medicaid program in 1990 to encourage more physicians to take Medicaid patients. For example, fees for global billing for prenatal care and delivery increased from \$595 to \$1,050. In 1993, fees increased for case management. While their incentives led to reduced rates of inadequate prenatal care, they also increased maternal paid claims.

A national study² done by Mathematica in 1990 showed WIC benefit cost ratios ranging from \$1.77 to \$3.13 saved for each \$1 spent on WIC. This looked at Medicaid costs from birth to 60 days for mothers and their newborns in five states. Prenatal costs before birth were excluded. In the present 1994 Missouri study, if prenatal costs before birth were excluded, the benefit-cost ratio would be similar to this national study (\$1.82 saved per dollar spent on WIC).

Regardless of these benefit-cost estimates, the Missouri WIC prenatal program continues to show strong benefits in reduced rates of inadequate prenatal care, low birth weight and prematurity, and increased birth weights. In addition, there are substantial savings in newborn costs and newborn lengths of stay. Thus the Missouri WIC prenatal program continues to be a very beneficial program for women and their infants.

Table 3
Comparisons of 1980, 1982, 1985-1986 and 1994
WIC-Medicaid Study Results

	<i>WIC</i>	<i>Non WIC</i>	<i>Difference</i>
Number of Live Births			
1980	1,883	5,745	--
1982	3,261	5,825	--
1985-1986	9,782	8,162	--
1994	19,930	5,706	--
Inadequate Prenatal Care (Percent)			
1980	39.1	41.5	2.4
1982	35.4	44.2	8.8
1985-1986	33.0	41.4	8.4
1994	20.9	35.5	14.6
Mean Birth Weight (Grams)			
1980	3,151	3,145	6
1982	3,162	3,131	31*
1985-1986	3,158	3,133	25*
1994	3,264	3,219	45*
Low Birth Weight (Percent)			
1980	10.7	12.6	1.9*
1982	10.1	13.1	3.0*
1985-1986	11.1	13.0	1.9*
1994	8.5	10.2	1.7
Newborn Medicaid Costs			
1980	\$567	\$672	\$98*
1982	\$1,250	\$1,326	\$76*
1985-1986	\$1,652	\$1,777	\$125*
1994	\$3,071	\$3,665	\$594*
Benefit Cost Ratio (Medicaid Paid Claims)			

1980	--	--	0.83
1982	--	--	0.49
1985-1986	--	--	0.79
1994	--	--	0.55

*Difference statistically different at .05 level.

References:

¹Missouri Monthly Vital Statistics. WIC Cost/Benefit Analysis 1985-1986. Vol. 22, No. 10, December 1988.

²Mathematic Policy Research. The Savings in Medicaid Costs for Newborns and Their Mothers from Prenatal Participation in the WIC Program. Vol. 1, USDA Food and Nutrition Service, Oct. 1, 1990.

Provisional Vital Statistics for April 1997

Live births increased in April as 5,688 Missouri infants were born compared with 5,598 in April 1996. The April birth rate was 12.8 per 1,000 population, slightly more than the 12.7 rate one year earlier.

Cumulative births for the 4- and 12-month periods ending with April also show increases. For the first third of the year, the birth rate increased from 13.7 to 14.3 per 1,000 population.

Deaths increased in April as 4,608 Missourians died compared with 4,379 one year earlier. For the first third of the year deaths increased slightly from 19,795 to 20,090.

The **Natural increase** for Missouri in April was 1,080 (5,688 births minus 4,608 deaths). For January-April, the natural increase rose from 4,511 to 5,206.

Marriages totaled 3,069 in April, virtually the same as the previous April, while **dissolutions of marriage** show decreases for all three time periods presented in the table below.

Infant deaths decreased in April, but remain higher for the cumulative 4- and 12-month periods ending with April. For the 12 months ending with April the infant death rate was 7.9 per 1,000 live births compared with 7.7 in 1996.

PROVISIONAL RESIDENT VITAL STATISTICS FOR THE STATE OF MISSOURI

Item	April		12 months ending with April						Provisional				
	Number		Rate*		Number		Rate*		Number		Rate*		
	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997	1995	1996	1997
Live Births	5,598	5,688	12.7	12.8	24,306	25,296	13.7	14.3	73,026	73,533	14.1	13.7	13.7
Deaths	4,379	4,608	10.0	10.4	19,795	20,090	11.2	11.3	54,136	54,388	10.2	10.2	10.1
Natural increase	1,219	1,080	2.8	2.4	4,511	5,206	2.5	2.9	18,890	19,145	3.9	3.5	3.6
Marriages	3,057	3,069	7.0	6.9	11,113	11,348	6.3	6.4	45,397	45,141	8.5	8.5	8.4
Dissolutions	2,309	2,011	5.3	4.5	9,094	8,047	5.1	4.5	26,681	25,661	4.8	5.0	4.8
Infant deaths	62	55	10.5	9.4	202	220	8.1	8.9	561	584	7.9	7.7	7.9
Population base (in thousands)	...	...	5,359	5,395	...	...	5,359	5,395	...	...	5,290	5,332	5,371

*Rates for live births, deaths, natural increase, marriages and dissolutions are computed on the number per 1000 estimated population. The infant death rate is based on the number of infant deaths per 1000 live births. Rates are adjusted to account for varying lengths of monthly reporting periods.

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